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A THEORY OF 'NON-MARKET FAILURE': FRAMEWORK FOR IMPLEMENTATION --ETC(U)

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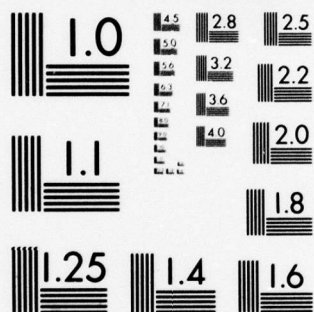
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FRAMEWORK FOR IMPLEMENTATION ANALYSIS

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Charles Wolf, Jr.

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A THEORY OF "NON-MARKET FAILURE":
FRAMEWORK FOR IMPLEMENTATION ANALYSIS*

Charles Wolf, Jr.

I. INTRODUCTION

It is almost a truism that the principal rationale for public policy intervention lies in the inadequacies of market outcomes. Yet this rationale is really only a necessary, not a sufficient, condition for policy formulation.** The latter requires that the realized inadequacies of market outcomes be compared with the potential inadequacies of non-market efforts to ameliorate them. The "anatomy" of market failure provides only limited help in prescribing therapies for government success.***

The central argument to be developed below can be summarized in several propositions:

* Many of the central ideas of this paper have developed from discussions I have had with Graham Allison over the past six years. Indeed, the question of whether the paper we agreed should be written would be written jointly or separately, and if the latter then by whom, was almost as frequent a topic of these discussions as the content of the paper. Fortunately, a six-months' stay at Oxford in 1976, for whose support I am indebted to The Rand Corporation and The Ford Foundation, provided the answer to this question. I am also indebted to Pat Crecine, George Eads, Gene Fisher, John Flemming, Robert Klitgaard, Nathan Leites, John Martin, Joseph Newhouse, Robert Roll, and Harry Rowen for comments on an earlier draft.

** The point is the same as Sidgwick's familiar comment: "It does not follow that whenever *laissez faire* falls short government interference is expedient, since the inevitable drawbacks of the latter may, in any particular case, be worse than the shortcomings of private enterprise" (Sidgwick, 1901). See also Cairncross (1976).

*** For some cogent observations closely similar to this line of argument, see McKean (1964).

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1. The reason the market often fails to produce satisfactory results is that incentives impinging on individuals and groups (firms, industries) acting in it frequently make behavior and outcomes diverge from ones that are preferable;
2. The reason government solutions often fail can be put in similar terms: incentives impinging on individuals and organizations acting for or constituting "government" often make behavior and outcomes diverge from preferable ones;
3. Underlying the shortcomings of both markets and governments is the divergence between individual costs and benefits and social costs and benefits. Yet a more complete explanation of these divergences differs in the two cases. As to market failures, there is a reasonably well-structured theory already in existence; for non-market failures, a theoretical framework remains to be provided;
4. The predictability of non-market failure can be advanced toward that already reached in the case of market failure by a general framework for analyzing the sources of non-market failure (NMF).^{*} The theory of non-market failure to be developed in this paper suggests what these sources of failure are and where to look for them;
5. Finally, implementation analysis is intended to connect NMF to the *ex ante* evaluation of alternative public policies, in order to improve policy analysis and choice, and to permit comparison between the *potential* inadequacies of government solutions and the *realized* inadequacies of markets.

^{*}The predictability of market failure is itself far from complete, extending to *signs*, but rarely to *magnitudes*, of the relevant partial derivatives. See below, pp. 33, 37-38.

In Part II, the theory of market failure is summarized as background for the discussion of non-market failure in Part III. Implementation analysis (the so-called "missing chapter"* of most policy studies), and its relationship to NMF, are considered in Part IV. The main argument and conclusions are summarized in V.

*The term "missing chapter" was first used in print by Allison (1975), although it was coined five years earlier by others.

II. THE INADEQUACIES OF MARKETS

That markets may fail to produce either economically optimal or socially desirable outcomes has been elaborated in a voluminous literature on the subject.* Although the last word has not been written,** the essential points in the accepted theory are worth summarizing as background for the subsequent discussion of *non-market* failures.***

There are four sources or types of market inadequacies:

1. Externalities and Public Goods

Where economic activities create "spillovers," whether benefits or costs, that are not, respectively, appropriable by or collectible from the producer, then market outcomes will not be (Pareto) efficient. Since these external benefits or costs don't normally enter into the calculations on which production decisions are based, too little output will tend to be produced where the externalities are (net) benefits, and too much where they are (net) costs, compared with socially efficient output levels. Education is an example of putatively positive externalities (benefits), providing a rationale for government intervention, through subsidy or direct public sector production, to compensate for the market's tendency toward an insufficient output level. Chemical and noise emissions from aircraft or other industrial activities are examples of negative externalities (costs), which provide a rationale

* See, for example, Reder (1947), Little (1950), Samuelson (1954), Lipsey and Lancaster (1956), Bator (1958), Mishan (1969), and Arrow (1971).

** As Arrow observes: "The clarification of these concepts [relating to market failures] is a long historical process, not yet concluded."

*** I use the term "market inadequacies" and "market failures" interchangeably, although strictly speaking the former is more inclusive. Most economists would confine "market failure" to departures from Pareto-efficient outcomes, thereby excluding distributional issues except to the extent that distribution affects efficiency (see below, p. 8). By way of contrast, some non-economists argue that distribution has, or should have, priority over efficiency (for example, Rawls' second principle of a just society), and they fault the market precisely because of its failure to accord this priority (see Rawls, 1971). As will be clear in the text, I am including distributional considerations within market "inadequacies."

for government intervention, through taxing or direct regulation, to compensate for the market's tendency toward an excessive output level.

A distinction can be made between private goods with externalities, and public goods: the former applies where *most* of the benefits or costs associated with output are, respectively, collected or paid by the producer, although *some* are not; and the latter applies where most of an activity's consequences comprise non-appropriable benefits (e.g., national security) or non-collectible costs (e.g., crime, an archetypical public "bad").*

*Externalities are thus a more general concept than public goods. Stated another way, a public good is the limiting case of a "private" good with externalities: "private" benefits approach zero, and the external benefits remain. More precisely, if v_{ij}^s is the valuation placed, or price paid, by the i th person for the j th unit of a good s , and mc_j^s is its marginal cost of production, then the condition for an optimum (efficient) level of output for a private good with externalities is:

$mc_j^s = v_{ij}^s + \sum_{m=i+1}^k v_{mj}^s$, where v_{ij} is the price paid by i , and the $\sum v_{mj}^s$ are externalities (experienced by all other k individuals as a result of i 's consumption of the j th unit of s), positive if the externalities are benefits and negative if costs.

For a pure public good, $v_{ij}^s = 0$. Consumption is collective and no single unit is purchased by anybody. The optimum condition then is

$$mc_j^s = \sum_{m=1}^k v_{mj}^s \text{ (cf. Mishan, 1969).}$$

Total demand for public goods is determined by *vertical* summation of individual demand curves, rather than horizontal summation as in the case of private goods. (The point is sometimes misstated as equivalent to a zero marginal cost of production. For example, the marginal cost of national defense in, say, the U.S. or NATO, is *not* zero, although non-taxpayers, as well as citizens of other countries, receive the benefits of such defense.)

The generalized explanation for the existence of externalities and public goods is that markets don't exist for capturing some benefits or levying some costs. Non-existence of markets in these cases is explained by (1) the high costs or inability of excluding beneficiaries (e.g., for benefits from national defense, or police expenditures), or of establishing property rights as a basis for claiming liability when they're infringed (e.g., noise emissions in airport vicinities); and (2) the lack of information required for market transactions to be concluded (e.g., ascertaining what the "true" v_{ij} are in the previous discussion), in part at least because of the "free rider" problem associated with (1).

Externalities and public goods, are thus one condition--though neither necessary nor sufficient--for government intervention.

2. Increasing Returns

Where economic activities are subject to increasing returns and declining marginal costs, the market mechanism will also fail to generate an efficient outcome. Under conditions of decreasing costs, the lowest cost mode of production is by a single producer. In a free market, the result will therefore be monopoly, and assuming single-part pricing, the outcome will be inefficient in both static and dynamic terms: statically, because output will be less than is efficient; dynamically, although more arguably (*vide* Schumpeter), because incentives for innovation will be weaker than would likely prevail under a more competitive regime.

Where increasing returns exist, various types of government intervention may be justified to correct the market outcome: (1) by directly regulating a "natural" monopoly (e.g., public utilities), or by setting prices or allowable rates of return on capital; (2) by legal protection to prevent a single-firm takeover, and to encourage competition (e.g., through antitrust legislation). The various types of intervention admittedly depart from a theoretically efficient outcome, although they seek to get closer to it.*

*Some discussions of market failure include increasing returns (e.g., Bator, 1958), while others exclude it. Arrow, for example, contrasts increasing returns ("essentially a technological phenomenon") with market failure (which relates to "the mode of economic organization"), Arrow (1971). I think this causation does not always hold. Improvements in technology can eliminate or at least reduce externalities by resolving the exclusion problem; for example, electronic warning and protection devices may be an efficient means of lowering the risk of theft for households purchasing them. One can imagine acoustical and air-filtration devices that, for people who use them, would reduce the injury inflicted by the emissions, or identify their source as a basis for imposing and collecting costs.

Conversely, the "technological" phenomenon of increasing returns can be reconciled with efficient pricing and output by suitable modes of economic organization, for example through multipart pricing. (continued)

3. Market Imperfections

Where the price, information, and mobility characteristics of a "perfectly functioning" market depart significantly from the realities, market outcomes will not be efficient, again providing a rationale for government intervention. Where prices and interest rates, for one reason or another, don't indicate relative scarcities and opportunity costs, where consumers don't have equal access to information about products and markets, where information about market opportunities and production technology is not equally available to all producers, or where factors of production are restricted in their ability to move in response to such information, market forces won't allocate efficiently and the economy will produce below its capacity.

In such cases, which apply to some extent in all markets and to a greater extent in some, the implication for public policy is to reduce, if not remove, these imperfections: to facilitate availability of information, to lower barriers to entry and mobility, and so on.

However, where many of the conditions required for efficient functioning of markets don't exist, improving some of these conditions won't necessarily improve the efficiency of the market as a whole. Consequently, the policy implications of market imperfections may be ambiguous.* And in some cases, public intervention may be justified even where it seems to *add* to these imperfections. For example, patent regulations, which are intended to restrict access to technological information, reduce the efficiency of resource use in the short run in the interest of long-run efficiency.

For a discussion of various pricing and market devices to reconcile increasing returns with efficient operation, see Wolf, Harris, Klitgaard, Nelson, Stein, 1975). For increasing returns are a source of market inefficiency only as long as markets don't exist for *separate* units of the same good. Allowing for enough subscribing, in the Arrow-Debreu sense, and hence separability, of commodities, increasing returns are theoretically as compatible with competitive equilibrium as are externalities.

*This is, of course, the essential message of second-best theory (Lipsey and Lancaster, 1956). For example, changing a tariff that has applied equally to imports from all countries, so that it applies instead only to a few countries, may reduce efficiency. Trade will be diverted as well as created, and the loss from the former may exceed the gains from the latter (see Viner, 1950).

4. Distributional Inequity

Most economists exclude distributional effects from market failure strictly defined. That the distributional results of well functioning markets may not accord with society's preferences is acknowledged, as is the plausible tradeoff between efficiency and equity.* In welfare economics the tradeoff is usually dealt with by considering the relative efficiencies of various redistributive measures (e.g., income taxes, excises, subsidies, unemployment relief, and income transfers), for achieving a specified redistribution, i.e., minimizing the allocative distortions resulting from the income and substitution effects of redistribution. The term "market failure" is usually confined to departures from competitive equilibrium and Pareto-efficient outcomes, and excludes departures from distributional equity.

Nevertheless, at one level and from one perspective, it is theoretically correct to consider distributional *inequity* as an example of market failure. From this perspective, income distribution is a particular type of public good.** An "equitable" redistribution does not result from freely functioning markets because philanthropy and charity yield benefits that are not appropriable by donors. Left to its own devices, the market outcome will entail no redistribution or too little, because of the usual "free rider" problem associated with public goods and incomplete markets.***

* Little (1950), Scitovsky (1952), and Okun (1975).

** Cf. Nicholson (1972).

*** The point can be formulated more precisely. Individual demand functions for redistribution can be defined in the same notional sense they can be defined for defense, or for law and order. For example, the demand for redistribution can be expressed as the desired *change* in current distribution (as measured, say, by the Gini coefficient), with demand declining as the required amount of voluntary individual philanthropy per dollar of earned income rises. Presumably, individual willingness to pay for redistribution declines as its price rises. A cost function for redistribution can also be defined in terms of the same two variables. In principle, individual demands would be summed (vertically), and the social equilibrium level of redistribution would be that for which the marginal optimization condition is satisfied (see footnote, page 5)). This equilibrium redistribution is not achieved because there is no market, or an incomplete market, for philanthropy, just as there is an incomplete market for defense. In both cases, voluntary donations (if unmotivated by special tax incentives) would be lacking for the usual non-appropriability, non-excludability reasons.

There is also a second level and a different perspective, for viewing distributional equity, quite *unrelated* to market failure in the strict sense. From this perspective, the equilibrium redistribution previously described may be quite inequitable in terms of one or another ethical norm. Even if the market could surmount the "failure" discussed above, its distributional outcome could still be socially and ethically *inadequate*.*

On these grounds, many people criticize the distributional outcomes of even perfectly functioning markets.** Furthermore, most public policy decisions are usually at least as concerned with *distributional* issues (i.e., *who* gets the benefits and who pays the costs) as with *efficiency* issues (i.e., *how large* are the benefits and costs). Since this paper's principal aim is to compare the various types of market inadequacies with the inadequacies of attempted non-market remedies, I include distributional inequity among the offenders.

* In this sense, distributional inequity is a market "inadequacy," rather than "failure."

** Rawls' (1971) work is probably the most cogent recent effort to distinguish equity from efficiency, and accordingly to fault market outcomes and the Pareto-efficient criterion of competitive equilibrium. Sometimes Rawls' points about equity or fairness, in contrast to efficiency, seem to me to have peculiar, if not absurd, implications. For example, one of his central ideas, the "difference principle," is intended to provide a tightly constrained basis for permissible differences in income and status, where the constraints derive from initial premises relating to justice or equity in contrast to efficiency. In elaborating the principle, Rawls argues that extra benefits received by the advantaged are just (fair) if and only if directly linked with *some* benefits realized by the least advantaged. According to the difference principle, a distribution is "just" even if benefits are *forgone* that have this property, as long as the original distribution retains it.

Some curious consequences follow from this position. Suppose a particular program (say, subsidized loans to new entrepreneurs from disadvantaged minority groups) provides tangible benefits to the disadvantaged, and even more substantial gains as a by-product to already advantaged groups. As I understood him, Rawls would term the distribution resulting from this program "just" or fair ("but not the *best* just arrangement"), even though it forgoes an *alternative* program that might entail small extra benefits for the already advantaged, as well as huge extra benefits for disadvantaged groups. "Dog-in-the-manger" behavior and spite become "just" in this curious formulation.

III. A THEORY OF NON-MARKET FAILURE

Non-market remedies for market failures may themselves fail. The reasons can be formulated in terms similar to those accounting for market failure. In both cases, incentives influencing individual organizations ("firms" in the one case, and those acting for or constituting "government" in the other) may lead to behavior and outcomes that diverge substantially from what is socially preferable.* The basis for the market/non-market distinction is that market organizations derive their revenues from *prices* charged for marketed output, while non-market organizations receive their revenues from taxes, donations, or other non-price sources.** Just as the absence of particular markets accounts for market failure, so non-market failures are due to the absence of non-market mechanisms for reconciling calculations by decisionmakers of their private and organizational costs and benefits with total costs and benefits. Nor, for reasons we will suggest, are prospects for invention of suitably compensatory non-market mechanisms to avoid non-market failure notably brighter than for creating suitable markets where their absence leads to market failures. Where the market's "hidden hand" doesn't turn "private vices into public virtues," it may be hard to construct visible hands that effectively turn non-market vices into public virtues.

Public policies intended to compensate for market inadequacies generally take the form of legislative or administrative assignment to a government agency of responsibility for performing certain functions, and thereby producing certain outputs, which are expected to redress the shortcomings of the market. These outputs are of four types:

* Although "government" is the principal "non-market" organization, there are also others: universities, churches, PTAs, etc. The theory and types of non-market failure to be developed here apply to the performance shortfalls of these other non-market organizations, as well as governments.

** This is essentially the same criterion used by Bacon and Eltis (1976). Other distinctive characteristics of non-market activities are discussed below, pp. 11-15.

regulatory services (environmental regulation, radio and television licensing, interstate commerce regulation, pure food and drug control); "pure" public goods (national defense, space R&D); quasi-public goods (education, postal services, health research); or administering transfer payments (federal, state and local welfare programs, social security, etc.). The "value" of these outputs is expressed in national accounts as exactly equal to the cost of inputs used in producing them. But this accounting convenience doesn't tell us anything about the efficiency or social value of the outputs. Nor does it tell us why producing these outputs is likely to result in specific types of *non-market* failure. To explain this prospect, we need to examine the distinctive supply and demand characteristics that differentiate non-market outputs from market outputs.

On the supply side, there are several such characteristics:

- (a) Non-Market outputs are usually hard to define in principle, ill-defined in practice, and extremely difficult to measure independently of the inputs which produce them.

Non-market outputs are generally intermediate products which are, at best, only remote proxies for the "real" or final intended output: for example, environmental impact precautions enforced by EPA; licenses issued or rejected by the FCC; forces and equipment developed and deployed by the military services; students taught at different levels by the public school system; research projects funded by NIH; cases processed and payments disbursed by the social welfare agencies. Units for measuring final product are usually non-existent, and it is often hard even to distinguish "more" from "less." Consider, for example, the difficulty of measuring military "worth," specifying "quantities" of national defense, or education, or even regulatory services, in terms that are

separate from the inputs used in producing them. Measuring outputs by their inputs becomes accepted because measuring outputs directly is so difficult.

- (b) Evidence of output quality is also elusive, in part because the information that would in the market be transmitted by consumer behavior is missing. Consider, for example, the difficulty of determining whether the "quality" of education or welfare programs or environmental regulation is "better" or "worse" now than two or three years ago. Moreover, such signalling as may be provided concerning "consumer" (i.e., citizen) reactions tends to be too little and possibly non-representative (e.g., letter-writers may be cranks, but the non-writers aren't thereby implying approval), or too gross and too late (e.g., through Congressional hearings, or the ballot box) to be an effective means of monitoring output quality. To monitor output quality requires disaggregative, precise, representative and regularized feedback, and these are hard to realize for non-market output.* Congressional committees, the Congressional Budget Office, ombudsmen, consumer groups, voter and consumer surveys, and other "watchdog" devices help, but their separate and collective effectiveness in monitoring output quality inspires only limited confidence.
- (c) Non-market outputs are usually produced by a single agency whose exclusive cognizance in a particular field is legislatively mandated, administratively accepted, or both (e.g., the regulatory agencies, the public school system, NASA's role in space, etc.). It is rare that

* Hirschman's (1970) notions of "exit" and "voice" satisfy some of these criteria, but their effectiveness as monitoring and signalling devices is limited because they apply only to "insiders," not to consumers.

this exclusivity is contested. Where it is (e.g., between the Air Force and the Army in providing battlefield air support), resolution is frequently on grounds unrelated to output quality. In sum, the absence of sustained *competition* is another factor contributing to the difficulty of evaluating output quality.

- (d) Finally, non-market output is generally not connected with any "bottom line," comparable to the profit-and-loss statement of market output, for evaluating performance. Nor, in the case of non-market output, is there a reliable mechanism for terminating non-market activities if they are unsuccessful.

Perhaps the closest analogy to a market "test" in the case of non-market output is military performance in war. Because it faces competition in war, the military does have special incentives to produce quality output. Yet even in this case, the effectiveness of these incentives is diminished by a paradox. The more successful is potential military performance, the more likely is military conflict to be deterred; and the more effective is deterrence, the less seriously is the risk of war likely to be taken, and hence the weaker it becomes as an incentive to motivate high performance.

There are also distinctive characteristics that apply to the demand for non-market activities, and to the process by which these demands become effective.

- (a) As a result of the activity, perhaps hyperactivity, of information media, environmental groups, and consumer organizations, there has in the past few decades been an enormous expansion in public awareness of the shortcomings of market outcomes. Increased awareness of

monopolies, oligopolies, imperfect markets, negative externalities (e.g., pollution), and distributional inequities, has resulted in intensified and politically effective demands for remedial action by government.

- (b) In the political process, which mediates these demands, rewards often accrue to legislators or executives from articulating and publicizing problems, and legislating proposed solutions rather than assuming responsibility for implementing them.*
- (c) In part as a consequence of this reward structure, the rate of time discount of political actors tends to be higher than that of "society." Furthermore, there is often an appreciable disjuncture between the time horizons of political actors, and the time required to analyze, experiment, and understand a particular problem (i.e., a market inadequacy) in order to see whether a practical remedy exists at all.

The result of these demand characteristics is often a premature, but politically effective, demand to establish public programs and to assign responsibilities for producing some non-marketed output, as an apparent or symbolic response to the originally perceived market inadequacy. The "equal opportunity" and "model cities" programs of the 1960s, and the medical R&D decision in the early 1970s to emphasize "targeted" cancer research, are examples. In these cases, as in others, the political effectiveness of public demands can lead to non-market activities with infeasible objectives and redundant costs.**

The supply and demand characteristics of the non-market sector are fundamental to the theory of non-market failure. They provide an explanation for NMF, clues about where to look for specific types and sources of NMF, and a basis for formulating a typology of non-market failure analogous to that which already exists for market failure. In both cases, the "failures"--whether market or non-market--are evaluated

* Downs (1967)

** See below, pp. 27-30.

against the same criteria of success: allocative (Pareto) efficiency,^{*} and distributional equity judged according to some explicit social or ethical norm. Non-market remedies "fail" to the extent they, too, result in outcomes that depart from the efficiency or distributional goals by which market outcomes are judged to fail. Although the touchstones of success are similar, the ways in which non-market solutions "fail" differ from those in which market outcomes fail.

TYPES AND SOURCES OF NON-MARKET FAILURE

We turn next to construct a typology of non-market failure, identifying four types and locating their sources in one or more of the distinctive demand and supply characteristics of non-market output.

1. "Internalities" and "Private" Goals

All operating agencies require, to conduct their activities, more or less explicit internal standards. The requirement does not principally arise from an agency's need to justify its activities externally, but rather from the practical problems associated with internal, day-to-day management and operations: evaluating personnel; determining salaries, promotions and perquisites; comparing sub-units within the agency in order to help in allocating budgets, offices, parking space, and so on.^{**} Lacking the direct performance indicators available

^{*}Hence, in both cases other efficiency criteria are neglected, namely, dynamic efficiency, x-efficiency, and technological efficiency. Except for the later treatment of one type of non-market failure (i.e., redundant and rising costs, pp. 27-30 below), these other sources of efficiency are omitted from the discussion. This omission does not gainsay the argument, which I've advanced elsewhere, that the additional types of efficiencies may be larger in their collective impact on economic performance (productivity) than is allocative efficiency (see Wolf, 1977).

^{**}Much of the organizational behavior literature of the past two decades advances similar points of view. See, for example, March and Simon (1958), Simon (1961), Cyert and March (1964), Downs (1967), Allison (1971). See also Schultze in Haveman and Margolis (eds.) (1970).

to market organizations from consumer behavior and the profit-and-loss bottom-line, public agencies must develop their own standards. These standards are what I will call "internalities": *The goals that apply within non-market organizations to guide, regulate, and evaluate agency performance and the performance of agency personnel.* I refer to these internalities synonymously as "private" goals because they, rather than or at least in addition to, the "public" purposes stipulated in the agency's assigned responsibilities, provide the motivations behind individual and collective behavior within the agency. This structure of rewards and penalties constitutes what Arrow refers to as "an internal version of the price system."^{*}

It is, of course, true that market organizations also must develop their own internal standards in order to regulate the same quotidian functions required for the management of any organization. But there is an important difference. The internal standards of market organizations are generally related, even if indirectly, to meeting a market test, to responding to or anticipating consumer behavior, to contributing to the firm's "bottom-line." Sales, revenues, and costs materially affect the internal standards of market organizations. For market organizations, the "internal version of the price system" must be connected to the *external* price system. If the two are disconnected, the survival of a market organization will be jeopardized by the response of consumers and competitors, even in imperfect markets.

The situation of non-market organizations is different because the supply and demand characteristics associated with their output are different. Because measures of output are often so hard to define, because feedback and signalling from "consumers" is lacking or unreliable, internal standards for non-market organizations can't be derived from these sources. Furthermore, because there are usually no competing producers, the incentive to devise internal standards that will control costs is weakened. Under these circumstances, non-market agencies may develop "internalities" that bear no very clear or reliable connection with the ostensible public purpose which the agencies were intended to serve.

^{*} Arrow (1974).

In formal terms, internalities or private goals become arguments in the utility functions that agency personnel seek to maximize. Hence, internalities affect the results of non-market activities, as predictably and appreciably as externalities affect the results of market activities, in both cases causing divergences between actual outcomes and socially preferable ones. The existence of externalities means that some *social* costs and benefits are not included in the calculus of *private* decisionmakers. The existence of internalities means that "private" or *organizational* costs and benefits *are* included in the calculus of *social* decisionmakers. Whereas externalities are central to the theory of *market* failure, what goes on *within* public bureaucracies--the "internalities" that motivate their action and performance--are central to the theory of *non-market* failure.

In the market context, externalities result in social demand curves higher or lower than market demand curves, depending on whether the externalities are, respectively, *positive* or *negative*. And the levels of market output that result will be, respectively, below or above the socially efficient ones; hence, there is market failure.*

In the non-market context, "internalities" boost agency *supply* curves above technically feasible ones, resulting in redundant total costs, higher unit costs, and lower levels of *real* non-market output than the socially efficient ones; hence there is *non-market* "failure."**

Whether the non-market failure is greater or less than the market failure is an analytically interesting, and operationally crucial, question. Unfortunately, the answer is, in general, indeterminate.

* Recalling the optimum condition noted earlier (cf. footnote, p. 5 above), if the Σv_{mj}^s are positive, the j units produced under market conditions will be less than is socially optimal; where the Σv_{mj}^s are negative, the j units produced will exceed the social optimum.

** If the optimum condition were complied with, producing j units of output would be less than is socially optimal absent internalities, because mc_j^s is inflated by the internalities of the non-market producers. See the first footnote on p. 27 below.

The non-market sector in principle allows for externalities in determining social demand,^{*} and hence comes closer on this count to an efficient level of output. But it does so at a likely cost in terms of internalities arising on the supply side. These are reflected in inflated total costs, which push the non-market sector away from a socially efficient level, as well as mode, of output. Which failure is the greater, non-market or market, depends on whether the supply distortions created by internalities in non-market output are larger or smaller than the demand distortions created by externalities in market output.

What determines the specific internalities devised to motivate and monitor performance in particular non-market organizations? Three different hypotheses suggest possible answers.

One hypothesis is that internal standards are based on norms that, when an organization was started, appeared to be reasonable proxies for the elusive final output it was intended to produce.^{**} Thereafter, they may become formalized as organizational routines or standard operating procedures (S.O.P.s), accepted as a principal measure of performance motivating the organization's operations. While market organizations also establish S.O.P.s, these must generally meet a market test. If the costs of adhering to them exceed those connected with changing them, they will be altered. The S.O.P.s of non-market

^{*} The Σv_{mj}^s are, in principle, included in determining output decisions.

^{**} For example, a budget-maximizing internality [see below] may arise in non-market organizations because new organizations have to build up staff and facilities to handle their assigned responsibilities. Through a simple, inertial process, the proxy variable (increased staff and budget), that was essential for a particular non-market agency to get started, becomes accepted and retained as a convenient indicator of agency performance.

McFadden's attempt to infer what an agency (i.e., California State Highway Division) is trying to maximize, by observing its prior behavior (e.g., with respect to project and route selection, compared with optimal choices) is in the spirit of this hypothesis. See McFadden (1975).

organizations must stand up to a different test. Generally, a Congressional hearing or scandal of some sort is required for change; and these may or may not be related to agency performance.

A second hypothesis is that those internalities are selected which maximize the income (and non-income perquisites) of agency members.*

The third hypothesis is that specific internalities arise because they tend to increase the benefits received by a constituency group which has succeeded in coopting a particular non-market organization. Often, the cooptation is by a constituency that the non-market agency has been set up to regulate.**

It may be worthwhile to illustrate several specific internalities that often accompany non-market activities, bringing non-market failures or distortions in their midst.

a. Budget Growth ("more is better")

Lacking profit as a standard for motivating and evaluating performance, a non-market agency may adopt the agency's budget as its maximand, or at least as an important argument in the agency's utility function. Performance of the agency's personnel and sub-units is then evaluated in terms of their contribution to expanding its budget, or protecting it from cuts. Incentives within the agency will develop to reward participants for "justifying costs rather than reducing them,"*** a characterization that has been applied to the Defense Department and the military services, but surely is not confined to them.

* For example: larger budgets generally mean larger numbers of supergrade jobs; the *anti*-new technology internality of the primary schools (see below, p. 24) protects skills, positions and income of senior members; etc. This hypothesis is close to the view taken by McKean (1964), Niskanen (1971), and Stockfish (1975). In some cases, the first and second hypotheses lead to similar predictions, e.g., the budget maximand. In others, the predictions probably differ, e.g., the information-acquisition maximand (see below, p. 25) is hard to reconcile with the first hypothesis.

** This hypothesis is favored by Stigler (1971), and applied empirically to transportation and to professional licensing. The list in the footnote on p. 35 of regulatory agencies, and the constituencies they affect most directly, suggests other examples of this hypothesis.

*** Defense Science Board (1973), quoted in Nimitz (1975).

The following instruction from a former Chief of Naval Operations to subordinate commands shows how government budgetary procedures may be translated into internal agency pressures to spend rather than save resources:

Fiscal Year 1972 outlay targets promulgated...as part of the President's budget for FY 1973 are over \$400 million above targets in the earlier FY 1972 budget... Difficulty of achieving these targets during remaining months of 1972 fully appreciated, but importance of avoiding shortfall in meeting newly established FY72 targets to avoid resultant adverse effects on anticipated FY73 outlay ceiling *dictates need for top management attention. Anticipate any shortfall in FY73 outlay target could be translated into program loss under FY 1973 outlay ceiling.** (italics added)

Stripped of bureaucratic jargon, the CNO is advising subordinate commanders to find ways to spend funds quickly, and plainly implying his intention to evaluate their performance in terms of how well they succeed!

As one observer, commenting on the motivations behind actions of the military services, notes: "The welfare of a service is measured by its budget."**

The result of a budget internality is likely to be a distortion in the level of agency activity; in other words, a non-market failure to produce a socially optimal outcome.***

* Cited in Fitzgerald (1972).

** Nimitz (1975).

*** Using plausible demand and cost functions, Niskanen (1971) has shown how the budget internality will lead to an output level above the socially efficient one. Stockfish (1975) and McKean (1964) also emphasize budget growth as a distorting influence on the behavior of government agencies.

Variants of the budget maximand can lead to similar non-market failures. For example, managers of the West German public television and telephone system reportedly have asserted that their primary objective is to raise rates and sales so as to maximize *gross* revenues. This, they explained, was necessary to "finance their further growth"! * If revenue maximization is the internal performance standard, output will rise as long as marginal revenue is positive, again resulting in non-market failure to produce a socially efficient outcome.

When an American businessman was asked in 1972 to assume management responsibility for the Postal Service, he found that its vast and growing financial predicament was due, in part, to its system of determining pay scales for postmasters: "Postmasters were actually paid [based] on how many employees they had, how many branch offices they had, or how many trucks...Can you imagine a greater disincentive?" **

A study of nationalized industries in Britain suggests another variant of the budget-revenue maximand. Evidently, the management of such industries hedges *less* against uncertainty, than do private profit-seeking firms, by adopting *lower* targets on rates of return for acceptable new investment projects proposed by industry sub-units. The result is a larger claim on investible resources with a tendency for expenditure on plant and equipment to grow faster than, but its utilization to lag behind, that prevailing in private industry. ***

A distinctive variant of the budget internality is the agency's employment level. A public agency, eschewing or precluded from profit maximization as its objective, may attempt to maximize the size of its employed staff. For example, British Rail, a nationalized industry with one of the half-dozen largest number of employees in Britain, operates under acute pressure from trade unions and government to maintain high employment levels and avoid "redundancies." Operating under such incentives, featherbedding by managers and foremen becomes a rewarded

* I am indebted for this example to James Rosse.

** *The Los Angeles Times*, December 3, 1972.

*** Personal communication from John Flemming.

practice. High employment per unit of service, the reciprocal of high labor productivity, is aspired to, resulting once again in non-market failure.

b. Technological Advance ("new and complex is better")

Often compatible with the budget internality is one relating to "advanced," "modern," "sophisticated," or "high" technology.* Non-market agencies, whose activities may be justified in the first instance by one or more of the acknowledged sources of market failure, may establish advanced technology or technical "quality" as a goal to be sought in agency operations and performance. In medicine, a bias toward "Cadillac" quality health care, and in the military a sometimes compulsive tendency toward development and procurement of the "next generation" of more sophisticated equipment, may result. Explicit consideration of whether these advances are worth their extra costs is then regarded as inappropriate because the operating agencies either are not intended to maximize net revenues (in the case of hospitals), or earn no revenue since they are producing a public good (in the case of military services).**

*This is not the place to attempt to define precisely what is meant by "high technology," a subject richly clothed in confusion in both popular and professional discussion. To consider whether the term does, or should, refer to products or processes, novelty or efficiency, costs and/or effectiveness, would take us too far afield. For present purposes, I will conveniently assume that high technology, like a camel, is easy to recognize if difficult to describe.

**Newhouse has shown formally how the addition of a "quality" argument in the maximands of non-profit hospitals tends toward misallocation of resources in the health care industry. A non-market failure results because managers trade off quality against quantity, producing a different product from that which consumers would choose if they were spending the resources which non-profit hospitals receive from public or philanthropic sources. Newhouse (1970). In the Newhouse model misallocation is reduced because a non-profit hospital's choice of high quality is assumed to shift consumer demand upward, thereby adding to the market value of outputs. However, this may not occur. As long as the non-profit hospital draws a subsidy (from government or philanthropy) based on the presumed market failure (e.g., externality) which the subsidy is intended to correct, the hospital can price its output below cost, while indulging its practitioners' taste for quality. The original source of market failure is not thereby redressed.

An example is provided by the purchase of disposable syringes by the British national health service in the late 1960s when these gadgets were invented. Their novelty suggested merit. Only later was it demonstrated that repeated use of durable syringes had, in fact, been accompanied by equal or lower rates of attributable infection, and at lower cost.*

Perhaps especially in the military services is the development and deployment of systems embodying the latest technology taken to be an organizational imperative. As one practitioner has observed: "In the Air Force, advancing technology has become a part of the professional ethic."**

The technological ethic isn't confined to the Air Force. Organizational pressures toward sophistication, complexity and technological novelty play a powerful role in the acquisition process of other services as well.*** Nuclear powered supercarriers are no less an illustration than the FB-111 or the F-15 aircraft.

The American space program is pervaded by a similar, indeed legislatively encouraged, imperative. From NASA's legislative

*Feldstein (1968).

**Head, in Head and Rokke (1973). The particular attraction in the U.S. Air Force of technological advance as an organizational internality is well-known. The process of its adoption is probably an example of the hypothesis referred to earlier, concerning initially valid proxies whose validity may have diminished after the proxy had already become accepted and engraved in agency operating routines. For example, when the Air Force was established as a separate service in 1947, two circumstances impelled it toward particular emphasis on technological advance as an organizational internality: (a) the two decades of struggle within the U.S. Army to win acceptance of the new aviation technology, independent of artillery and infantry; and (b) the major technological advances achieved during World War II (e.g., in radar, and nuclear weapons, especially) encouraged the belief that the outcome of a future war "would be determined solely by the technological power of weapons that adversaries could bring to bear in its first moments" (Sapolsky, 1972).

***Alexander (1974), Fitzhugh (1972).

mandate for "maximum utilization of the scientific and technical results of the space effort for non-space purposes,"^{*} it has been a short step to formalize internal agency norms and incentives favoring the development of novel and complex technology, whether or not it seems likely to be efficient.

The technological internality can have perverse consequences, not only in excessive zeal for what is complex and novel, but in mindless opposition to what is simple and familiar. In the Vietnam War, use of a modified propeller-driven cargo aircraft, with long loiter time and a slow stalling speed as a platform for delivering guided munitions as well as airborne artillery, was by far the most efficacious source of American fire-power. Yet turning this "gunship" idea into an operating system was delayed by five years, largely because of service opposition to what was viewed as a technologically retrograde step!

A bias *against* new technology can, of course, equally lead to non-market failure. Parts of the American educational system, for example, seem to resist even the development and experimental use of such new technology as video-taping for presentations to large classes, computer-aided instruction, and performance contracting, all of which might reduce the demand for teachers. Indeed, the education industry's behavior often suggests the opposite of the maxim that "new and complex is better." While a maxim that "familiar and simple is better" may be *generally* preferable, rigid application of it can have equally perverse effects on performance.^{**} Resistance by the education sector to technological advance is similar in quality, although opposite in direction, to the military's frequently uncritical enthusiasm for

^{*}National Aeronautics and Space Act of 1958. Public Law 85-568.

^{**}The education industry has been so impervious to change as to lead one critic to propose the "deschooling" of society! (Illich, 1971).

technology. In both cases, a "private" organizational goal, or "internality," contributes to non-market failure.*

c. Information Acquisition and Control ("knowing what others don't know is better")

Another element in the utility functions of some non-market organizations is information. Frequently in non-market, as well as in market, organizations, information is readily translated into influence and power.** Consequently, information becomes valued in its own right--an internality for guiding and evaluating the performance of agency members.

Acquisition and control of information may be particularly important as a goal for agencies involved in foreign policy, because in this area constraints are already tight on other possible internalities, such as budget or technological advance.

An example is provided by Kissinger's use and adaptation of the NSC framework and the Committee of 40 as means of acquiring exclusive information, and hence increasing influence for the National Security Council in the 1968-73 period. The careers of NSC staff members, adjusting to the incentives provided by the new structure, waxed or waned in accord with their ability to understand and adjust to this particular internality and the behavioral incentives it created. Staff members succeeded by demonstrating their ability to collect and protect new information, which Kissinger's organizational and procedural rearrangements made possible, for the "private" use of the NSC. Information available *only* to the NSC seemed to have become an end in itself, an internal standard motivating staff behavior.

* It's perhaps worth mentioning that the resistance of educators to technological change is not the same issue as the relative effectiveness of "formal" vs. "informal" teaching methods. "Informal" or "progressive" methods were around for a generation before their eventual adoption in British state schools, a move that more recent evidence suggests was not justified on effectiveness grounds (Bennett, 1976).

** For a more general treatment of the importance of informational access and control in "post-industrial" society, see Bell (1975).

The effect of this internality on the conduct of foreign policy, and more particularly on the effectiveness of the State Department, in contrast with the NSC, is surely debatable. That the informational internality will lead to non-market miscarriages is likely, since it connects in no obvious way with the final and elusive outcome sought, e.g., the successful conduct of foreign policy.

In associating these specific types of "internalities" and ("private" goals) with *non-market* activity, I do not imply their absence from market activity. For the usual reasons pertaining to more or less imperfectly competitive markets--which, of course, are the only markets that exist--these characteristics also apply, to some extent, in market activity. But this extent is likely to be more limited. Price competition among firms and products, as well as competition within firms among managers seeking promotions, generally limits the extent of cost-inflating internalities in market activities, as compared with non-market activities.

What can be said to summarize the difference between "internalities" associated with non-market output and "externalities" associated with market output? Whereas externalities in the market sector are costs and benefits realized by the public but not collectible from or by producers, respectively, the "internalities" associated with non-market output are usually *benefits* perceived as such by producers, and paid for by the public as part of the costs of producing the non-market output. Consequently, internalities tend to raise costs and supply functions. These shifts, moreover, are likely to increase over time if and as non-market agencies succeed in building special constituencies within the Congress and the public that are more immediately concerned than is the broader taxpaying public over whom the costs are spread.

Internalities are thus elements of the "private" goals of producers: "private" in the sense that their role is primarily that of satisfying interests and motives of non-market producers and producing organizations, rather than contributing to the public sector's intended final output.

Such internalities and "private" goals, often quite remote from an elusive final product, are as frequent and important in non-market activities as externalities are in market activities.*

2. Redundant and Rising Costs

Whether policy takes the form of regulation, administering transfer payments, or direct production of public goods, there is a tendency for these non-market activities to exhibit redundant costs ("X-inefficiency")-- i.e., for production to take place *within* production possibility frontiers-- and for cost functions to rise over time. If technological possibilities exist for lowering cost functions, raising productivity, or realizing economies of scale, these opportunities are likely to be ignored or exploited less fully by non-market than by market activities. Non-market failure, in the form of technically inefficient production and redundant costs, is the result. Moreover, these redundancies may well rise over time.**

*The existence of internalities in organizations producing non-market outputs can be related to the condition for determining an optimum (efficient) level of output. Recalling the notation used earlier (above, footnote p. 5) the condition is:

$$mc_j^s + \sum_{p=1}^q mc_{pj}^s = \sum_{m=1}^k v_{mj}^s,$$

where mc_{pj}^s is the marginal cost of the p^{th} externality associated with production of the j^{th} unit of the s^{th} public good.

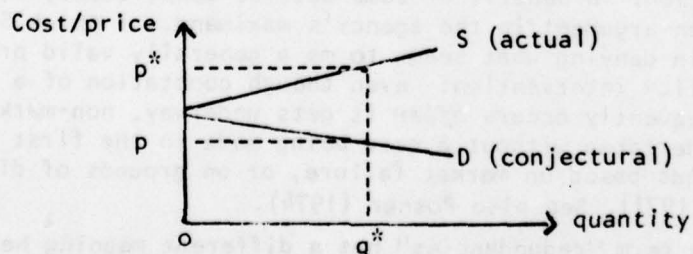
This specification is closely related to Stigler's "positive" theory of regulation: a benefit of some outside constituency becomes an agency goal and an argument in the agency's maximand. I think Stigler errs, however, in denying what seems to me a generally valid proposition about public policy intervention: even though cooptation of a regulatory agency frequently occurs *after* it gets underway, non-market activity is rarely undertaken without a case being made in the first place, on normative grounds based on market failure, or on grounds of distributional equity (Stigler, 1971). See also Posner (1974).

**The term "redundancies" has a different meaning here from that referred to earlier, above, pp. 21-22. Clearly, retaining low productivity to avoid *employment* redundancies, as in the case of British Rail cited earlier, is one source of *cost* redundancies.

The sources of these non-market failures lie in the demand and supply characteristics associated with non-market output. As public awareness of the inadequacies of market outcomes grows, demands for remedial action intensify. Dissatisfaction with existing circumstances may result in misperceiving the cause as a market failure, rather than something more intractable like genetics, physical laws, or resistant sociology. With rewards frequently accruing in the political arena to publicizing the problems and legislating or initiating action that is labelled as a remedy, non-market activities may be demanded and authorized which have quite infeasible objectives. Objectives may be internally inconsistent: for example, bringing all students' reading scores up to the mean; or minimizing the time individuals are unemployed while maximizing their earnings; or providing foreign aid to accord with "need," but also to encourage better developmental performance. Or objectives may be specified for which no known technology exists; for example, providing "dignified" work for people with low IQs, or training people with IQs of 70 to be draftsmen, or achieving a cure for cancer by 1980.* Redundant costs may result at *any* positive level of non-market output.**

* In the words of one observer, whose comment is all the more insightful because it preceded his own not inconsiderable role in providing evidence in its support: "...New agencies, from which better things might be hoped, are put under unremitting pressure to produce glamorous new programs--before the necessary analysis has been performed" (Schlesinger, 1968).

** In effect, demand and supply functions may not intersect, yet the demand for non-market activity may still be politically "effective."



Non-market output of at least q^* will be politically supportable if those receiving the benefits, $\int_0^{q^*} D(q)dq$, are politically more effective (even

Redundant costs may also result from the difficulty of measuring output, and the resulting need, as well as latitude, to establish agency goals, or "internalities" as proxies for non-market output. As noted earlier, the cost-inflating effect of internalities may endure because non-market activity is conducted without competition.

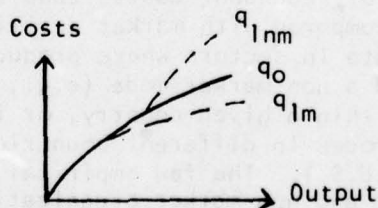
Redundant costs may also rise over time because of the absence of a reliable termination mechanism for non-market output, thereby allowing agency managers to reach higher levels of internal goals.

Those responsible for market activities usually have an incentive to expand the production possibility frontier and to lower costs over time, because of actual or potential competition or because of opportunities for additional profits. By contrast, those responsible for non-market production may be spurred to increase costs (e.g., staff), or to increase output even if its incremental value is less than incremental costs (e.g., the German TV case cited earlier), resulting in redundant costs that rise over time.*

though they pay nothing, or at least pay less than the benefits), than those who pay the full costs, $\int_0^{q^*} S(Q)dq$, or at least pay the difference

between the full costs and the amount paid by the first group. To avoid tautology requires that the ingredients of "political effectiveness" (e.g., organizational skill, media pressure, etc.) for the gainers and the losers can be evaluated independently of the non-market undertaking.

* Hence, cost functions for non-market activity are likely to exhibit the following pattern over time:



q_0 is the technologically-possible cost function at time $t = 0$; q_{1m} is the function under a market regime at $t = 1$, falling because of incentives to probe for cost savings; q_{1nm} is the cost function at $t = 1$ under a non-market regime, with the function tending to drift upward because of private goals (internalities). This upward drift is what I mean by (continued)

These tendencies toward redundant and rising costs were described by a departing director of the U.N.'s Food and Agriculture Organization with reference to his own organization:

Eighty percent of its budget is destined to pay for a gigantic centralized bureaucracy in Rome, 11 percent to put out publications that no one reads, and the remaining 9 percent to holding meetings and for travel expenses that are largely unnecessary.*

The details of the FAO may be extreme, but the general picture probably has wide applicability to non-market agencies and activities.

3. Derived Externalities

Government intervention to correct market failure may generate unanticipated side effects, often in areas remote from that in which the public policy was intended to operate. Indeed, there is a high likelihood of such derived externalities, because government tends to operate through large organizations using blunt instruments whose

"rising costs." By "redundant costs," I mean the tendency of non-market activities to be carried on inside, rather than on, the production possibility frontier at any given time. The two tendencies thus relate to dynamic efficiency, and x-efficiency, respectively.

It should be possible to test the hypothesis advanced here that (a) rising costs, and (b) redundant costs, tend to be associated with non-market activities compared with market activities. One might use for the purpose cost data in sectors where production has been carried on in both a market and a non-market mode (e.g., education, fire protection, housing) within a given country, or in comparisons between market and non-market modes in different countries (e.g., health care in the U.K. and in the U.S.). The few empirical studies already done of production by market and non-market organizations (e.g., private vs. governmental production in fire protection and in refuse collection) suggest that the former tends to be more efficient, and that redundant costs tend to be associated with non-market organizations. See Ahlbrandt (1973) and Spann (1975).

* *International Herald Tribune*, April 26, 1976.

consequences are both far reaching and difficult to forecast. In the Russian proverb, "When elephants run, other animals tremble."

The likelihood of externalities is further enhanced by both demand and supply characteristics associated with non-market output. The build-up of strong political pressures for non-market intervention may create an effective demand for action before there is adequate knowledge or adequate time to consider potential side effects. Furthermore, derived externalities are generally more likely to occur later than sooner. Hence, the short time horizon and high time discounts of political actors predispose them to accord potential externalities at most only limited attention. And, finally, the frequently ill-defined nature of both quantity and quality of particular non-market outputs limits the motivation, as well as the means, for thinking seriously about their potential unintended side effects.

Of course, cost-benefit analysis tries to internalize such externalities, for example, by calculating the benefits of hydroelectric projects to include flood control, irrigation, and "feeder industries," as well as electric power. But the limitations of such analyses are numerous and well-known, resulting in part from the unanticipated nature of some of the side effects, whether costs or benefits.*

Derived externalities are hard to anticipate because the consequences of public policies may be far removed from the target. For example, when standards for noise emissions were established by the Environmental Protection Agency to compensate for the market's failure

* A detailed attempt to internalize such externalities, as well as a candid acknowledgment of the limitations of cost-benefit analysis which tries to do so, is contained in Hirshleifer, et al. (1960). Hirschman (1967) in his notion of the "Hiding Hand," emphasizes the benefits, rather than the costs, of unanticipated consequences from *selected* development projects undertaken by governments. Of course, whether the hand principally hides benefits or costs depends on which development projects are selected for retrospective examination.

to allow for these externalities, it was unanticipated that one result would be strains (i.e., costs) in American foreign policy relations with the French and British over the Concorde. That an embargo in soybean exports to Japan in 1973 would impact on U.S. military base negotiations in that country was also not anticipated (although perhaps it should have been). And that long-standing "Buy America" and other trade restrictions--once again, presumably based on a need for public policy intervention to compensate for market inadequacies--would make more difficult a move toward standardization and rationalization of weapons systems and forces in NATO, was also difficult to forecast.

Another instance of derived externalities is provided by public regulation of utilities. Permissible profits are typically calculated on the basis of return on capital, with the intention of holding prices closer to marginal cost in decreasing-cost industries, thereby overcoming one source of market failure. But a derived externality may also result as an unintended consequence, a source of *non-market* failure perhaps equivalent in magnitude to that of the original market failure. This result arises from a tendency toward inefficient substitution of capital for labor in the production processes of such regulated industries in order to raise the allowable profit base.*

Of course, derived externalities may be positive rather than negative. Construction of a North Sea barrier in the Veere inlet, for the safety of the Zeeland population in The Netherlands, meant the loss of mussel and oyster beds, but also the start of trout raising; the end of ocean-going boating, but also the beginning of a recreational industry based on smaller vessels in the new Veere Lake, none of which was anticipated when the Veere barrier was originally decided upon.

All of these examples represent a type of *non-market* failure: externalities, whether negative or positive, deriving from a public policy intended to compensate for an existing *market* failure. They

* Averch and Johnson (1962).

have in common, also, the characteristic of not being foreseeable (or at least not having been foreseen), at the time the policy was initiated. Since the derived externalities were not foreseen, obviously neither their signs nor their magnitudes could have been. To assume that such unforeseen externalities will be normally distributed around zero, and hence can be ignored in the aggregate, is convenient rather than convincing. Even so, policy choice would clearly be improved if the signs, let alone the magnitudes, of such derived externalities could be forecasted in particular cases.*

4. Distributional Inequity

Non-market activities, whether intended to overcome the distributional inequities of market outcomes, or to remedy other inadequacies in the market's performance, may themselves generate distributional inequities. The resulting inequities are often indexed on power rather than income or wealth.

Public policy measures--whether intended to correct distributional inequities, or to regulate industry because of externalities or increasing returns, or to produce public goods, or to redress market imperfections--place authority in the hands of some to be exercised over others. Whether the authority is exercised by the social worker, the welfare case administrator, the tariff commissioner, the utilities regulator, the securities examiner, or the bank investigator, power is intentionally and inescapably lodged with some and denied to others. The power may be exercised with scruple, compassion, and competence. It may be subject to checks and balances, depending on the law, on administrative procedures, on the information media, and on other political and social institutions.

*To the extent that better analysis can anticipate and calibrate the derived externalities associated with non-market output, they become analytically identical to the externalities associated with market output. Hence, the optimum condition for non-market output with derived externalities is the same as that specified above for market output with externalities. See above p. 5 footnote. However, determining signs as well as magnitudes *ex ante* for the $\sum v_{mj}^s$ may be even harder for non-market, "derived" externalities than for market externalities, because of the bluntness of non-market instruments and the frequent remoteness of their effects both in time and place.

Nevertheless, such redistribution of power provides opportunities for inequity and abuse. Corrupt practices are one type of abuse; for example, government contracts obtained through bribery, perhaps illustrated by the case of Lockheed's F-104 sales abroad; import licenses or preferential exchange rates conferred on the relatives, friends, or associates of influential bureaucrats and politicians in developed, as well as in less-developed countries. Less conspicuous inequities can also result from the decisions of welfare authorities in classifying cases and conferring or withholding aid to fatherless families with dependent children, or to potential recipients of aid for the aged, and so on. Anecdotes reflecting the vagaries, perversities and inequities associated with welfare programs are too numerous to recount, as well as too inexact to yield precise conclusions.

In the specific case of public policies intended to redistribute income, a frictionless, impersonal, and automated redistributive mechanism might avoid the inequitable distribution of power that might otherwise result from administration of the policies. But even a sharply progressive tax system--which is intended to serve this purpose--reserves considerable room for auditors to exercise judgment and hence power. The same applies to the redistributive expenditure programs mentioned above. One need not ascribe to those who administer public programs less humane or more fallible motives than the average to contend that some distributional inequities may result from efforts to rectify others, as well as from efforts intended to remedy still other market inadequacies. And, of course, there is still a presumption that the distributional inequities created by progressive taxes, or by redistributive expenditure programs are smaller than the inequities which such measures relieve.

Non-market activities may also result in distributional inequities indexed on income rather than power. It is truistic that any public policy will benefit some and take from others. Indeed, this will ensue *whether or not* the particular market inadequacy, which gave rise to a non-market intervention in the first place, was explicitly distributional in character. Public policy measures will increase the demand for some factors, skills, services, and products, and levy costs on

others. Those who are specialized in the former will benefit at the expense of those in the latter, *by comparison with the previously prevailing situation*. If public expenditures are increased for defense or education, because these are instances of public goods in the one case or private goods with large externalities in the other, organizations and individuals specialized in producing one or the other output will realize increases in their real income.*

Consequently, groups that are potentially benefited by a public policy measure intended to compensate for *market* failure can be expected to urge, and very likely believe, that *more* compensation is needed to bring about a *socially* optimal outcome than would otherwise be estimated. Educators, accepting the argument that *some* government subsidy is necessary to take account of positive externalities ignored by the market, very likely will argue that these externalities are greater than was originally allowed for, and hence warrant a larger subsidy. A similar point applies to the professional and business community concerned with aerospace technology and R&D.**

* Imposition of non-distorting lump-sum taxation to capture these economic rents is arguable in theory and likely to be unrealistic in practice.

** A recent paper by an executive of the General Electric Company displays the following suggestive matching between certain government organizations and policy areas, on the one hand, and business and professional "constituencies," on the other:

Government Organizations

Department of Defense, NASA
 Department of Agriculture
 Environmental Protection Agency
 Securities and Exchange Commission
 Interstate Commerce Commission
 Federal Communications Commission

 Tariff Commission

 Food and Drug Administration

 Federal Power Commission

 Nuclear Regulatory Commission

Related Business Organizations

Defense-space contractors
 Farmers; dairy, meat processors
 Auto manufacturers; elect. utilities
 Brokers; underwriters; issuers
 Railroads; truckers
 Radio & TV stations & networks;
 cable and pay TV
 Trade unions; business subject
 to import competition
 Drug industry; food & beverage
 industry
 Electric utilities; natural gas
 producers
 Atomic energy equipment builders

See Birdzell in Jacoby, ed. (1975).

The result is likely to be non-market failure in the form of a larger public subsidy, or a more protective regulatory policy, for the benefit of "constituencies" that are well organized: hence, a distributional inequity from the standpoint of non-benefiting groups, even though they may have acknowledged the existence of a market failure and the legitimacy of non-market intervention in the first place.*

The role of non-market activities in producing distributional inequities, whether these are reflected in maldistribution of power or of income, derives from specific demand and supply characteristics associated with non-market output.

On the demand side, the principal causal characteristic is heightened public awareness of the inequities generated by the market and the resulting clamor for redistributive programs, often *without* prior consideration of the inequities that may be generated by these programs themselves.

On the supply side, the principal characteristics leading to distributional inequities are the typical monopoly of non-market output in a particular field, and the related absence of a reliable feedback process to monitor agency performance. In the absence of competing producers, those who feel adversely affected, whether as victims of arbitrary administrative authority, or as general taxpayers, have notably less direct and less effective means of expressing their dissatisfaction than is available to consumers of marketed output who can withhold purchases or shift them to other producers. By contrast, those who realize special distributive *benefits* from particular non-market activities may have *more* direct and more effective means for expressing their support, through organized lobbying and advocacy, than is available to consumers in the marketplace.

*The distributional type of non-market failure is the core of Stigler's theory of economic regulation. Stigler finds empirical evidence to support this hypothesis in interstate variations in trucking regulation and in occupational licensing (Stigler, 1971).

This does not imply that the inequities of the market are *less* than those of the "non-market," but it does suggest there is an identifiable process by which inequities can result from non-market activities, as they can result from market activities.

* * * * *

In summary, the several types of non-market inadequacies can be tabulated in comparison with the inadequacies characterizing the market.

MARKET AND NON-MARKET FAILURES

<u>MARKET</u>	<u>NON-MARKET</u>
1. Externalities and public goods	1. "Internalities" and "private" goals
2. Increasing returns	2. Redundant and rising costs
3. Market imperfections	3. Derived externalities
4. Distributional inequity (income and wealth)	4. Distributional inequity (influence and power)

These parallel categories are suggestive, but should not be misunderstood. The inadequacies or "failures" of non-market activities are not the "duals" of those associated with market activities. The "externalities" on the market side are qualitatively related to the "internalities" on the non-market side only in the sense that each is a major source of "failure" in the market and non-market contexts, respectively. (Indeed, "externalities" in the market sector are conceptually closer to "derived externalities" in the non-market sector than either is to its horizontal neighbor in the two lists.)

However, two points apply to both lists.

1. For the several types of market and non-market failures, it is much easier to estimate *signs* than *magnitudes*.
Estimating magnitudes requires detailed empirical work

in specific cases and contexts. Moreover, it is no easier to determine the magnitude of, say, the (negative) national security "externalities" associated with U.S. reliance on Middle Eastern oil, than to determine, say, the specific "internalities" that affect the behavior of the U.S. Air Force and the magnitudes of these behavioral effects. Or, to take a more tractable example, it is probably no more difficult to estimate the "derived externalities" (negative as well as positive) resulting from environmental regulation than it is to estimate the (negative) "externalities" resulting from unregulated strip mining, or from noise emissions near metropolitan airports.

2. The types and sources of market failure indicate the circumstances in which government intervention is worth contemplating, and in which alternative policies are worth analyzing as possible remedies. Similarly, the types and sources of non-market failure indicate the circumstances in which government intervention may itself misfire, and in which potential correctives are worth analyzing as possible remedies for likely shortcomings of government intervention.

The existing theory of market failure provides a useful corrective to the theory of perfectly functioning markets. In a similar sense, the theory of non-market failure outlined in the preceding pages is intended as a corrective for the implicit theory of perfectly functioning governments. Just as market failures or inadequacies have provided the theoretical underpinning for applied *policy analysis*, so non-market failures provide the theoretical underpinning for *implementation analysis*, the analysis of how specific non-market activities (e.g., public policies) can be expected to operate, and to depart in predictable ways from their costs and consequences as originally estimated.

IV. IMPLEMENTATION ANALYSIS

"If to do were as easy as to know what were good to do, chapels had been churches, and poor men's cottages princes' palaces...I can easier teach twenty what were good to be done, than be one of the twenty to follow mine own teaching."

W. Shakespeare

"On s'engage et puis on voit."

N. Bonaparte

There is a much closer compatibility between the Bard and the General than appears at first glance from the eloquent metaphor of the one and the terse marching-order of the other. Shakespeare is observing how much harder it is to teach or learn how to *do* something--that is, how to implement--than how to formulate what *should* be done. Napoleon takes the point a step further: implementation can't be taught or learned at all! Instead, once a decision is made about what seems "good to be done"--or whom or what one needs to overcome--the best course is simply to get on with it, improvising and developing moves as one sees events and opportunities unfold.

The Napoleonic precept bespeaks the immense self-confidence of its author (decisively faulted on at least three notable occasions), as well as a profound lack of confidence in any other way of learning about implementation than doing it.*

It is hardly an exaggeration to observe that the meager attention given to implementation issues in policy analysis suggests a tacit endorsement of Napoleon's stance. Typically, policy analysis proceeds by comparing the costs and effectiveness of alternative programs intended to remedy the inadequacies of market outcomes or the inadequacies of previous programs. The comparison usually employs a more or less formal model of the problem under consideration. A preferred program is then selected by applying some criterion to the results of the model: for example,

* In the same vein was his dictum: "He will not go far who knows from the first whither he is going" (Ludwig, 1954).

maximizing effectiveness for a specified budget, or minimizing costs for a specified effectiveness target. Sometimes, indeed more and more frequently, a dominant choice doesn't emerge because there are numerous dimensions for measuring costs and effectiveness--for instance, distribution and status, as well as efficiency dimensions. Moreover, the various dimensions are likely to have different degrees of uncertainty, and different weights attached to them by different groups outside as well as inside the policy community. Under these circumstances, policy analytic studies should, and sometimes do, display separately the various dimensions of costs and effectiveness, scoring the competing alternatives accordingly, and leaving choice to a subsequent decisionmaker or decision-making process.*

Even the most sophisticated policy analysis usually ignores or gives meager attention to implementation issues. Policy studies rarely raise, and almost never answer such questions as *who* would have to do *what*, and *when*, and with what possible and likely resistances, modifications and compromises, if alternative A were chosen, or B, or C? As far as implementation is concerned, the Napoleonic dictum is tacitly accepted. It is therefore implicitly predicted that the costs and benefits, *as modeled in the analysis*, won't be altered by implementation.

When this implicit prediction is made explicit, it will be readily acknowledged to be unwarranted, as is suggested by a vast range of cases including the Vietnam war; development of the FB-111, and the innumerable other instances of "gold-plating" in the development of new weapons systems in the military; the Equal Opportunity programs launched in the early 1960s in the U.S. in the manpower area; and AFDC and unemployment insurance in the welfare area.

One numerical estimate suggests how badly policy studies turn out when prior estimates are compared with actual results. Cost estimating relationships, based on several dozen weapons systems

*For examples of such scoring methods, see Goeller et al., (1976), which displays environmental effects (on both flora and fauna), flood control effects, recreational effects, and agricultural effects, as well as the varying costs associated with alternative policies for dealing with the North Sea flood problem in The Netherlands.

developed in the U.S., showed that on the average costs for these systems (holding constant system differences in technology, performance, size, etc.) rose by a factor of 3 between the time development was begun and delivery was completed!*

Can policy studies do better in dealing with implementation matters than tacit acceptance of Napoleon's counsel? Must the implementation chapter of policy studies remain "missing"?

In recent years, interest in and discussion of these questions has increased substantially, concentrated in the new public policy journals (*Policy Analysis*, *Policy Sciences*), several recent books and case studies, and the curricula of graduate schools of policy analysis.** Most of this discussion has emphasized the typically large gaps between programs as designed and as executed, the lack of appropriate methods for anticipating these gaps and taking them into account in doing policy studies, and consequently the marked shortcomings of virtually all policy analysis in failing to address implementation issues systematically.

To move from these justifiable criticisms to the systematic analysis of implementation issues requires an acceptable paradigm and vocabulary. In the following discussion, I will suggest that the preceding treatment of non-market failures provides this paradigm: a method of analyzing how public policy (i.e., non-market) efforts to compensate for market "failures" may themselves fail for predictable reasons and in predictable ways. Anticipating the non-market failures can be invaluable for trying to avoid or reduce them, or for developing mixed market and non-market alternatives that will diminish the more undesirable consequences of each.

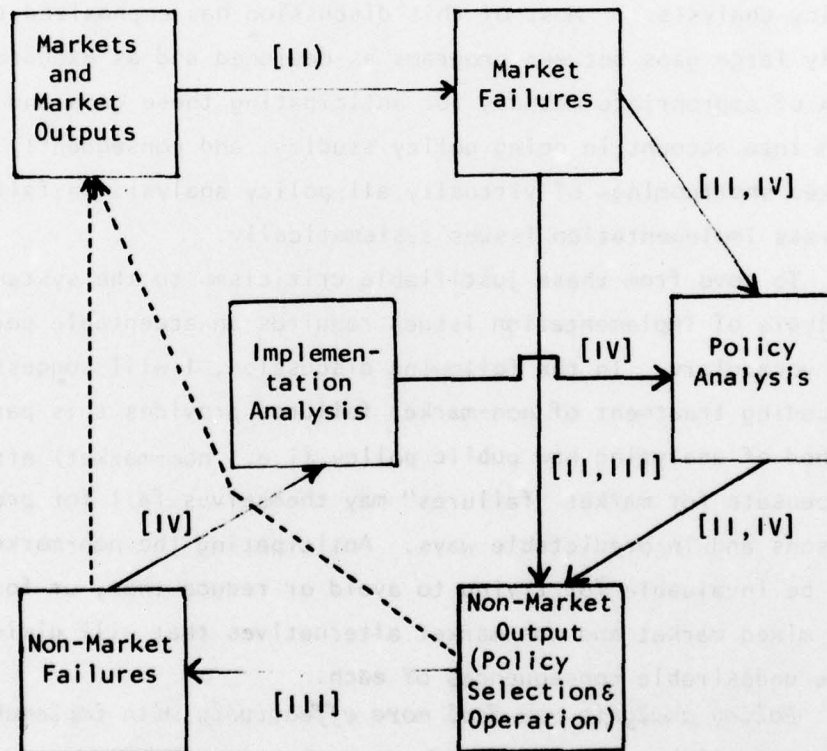
Policy analysis can deal more effectively with implementation issues by linking the types of non-market failure discussed earlier with explicit consideration of the "who-what-when"

*Summers (1962), Harman (1971).

**For a survey of this literature, see Hargrove (1975), Pressman and Wildavsky (1973), Allison (1975), and Berman (1977).

questions mentioned above. The reasons for implementation shortfalls--for costs to rise and effectiveness to fall *ex post*--in public policies intended to correct inadequacies of the market lie in the predictable inadequacies of non-market activities themselves. Hence, implementation analysis, as a regular segment of policy analysis, should proceed by applying the theory of non-market failures outlined above.

The principal connections among these stages and processes are summarized in the following diagram:



Emphasis in the preceding and following discussion is on the connections marked with solid lines. Roman numerals refer to the sections

of this paper where the indicated connections have been discussed. Section II has focused on the connection between market output and market failures; Section III on the connections between market failures, non-market output and non-market failures; and Section IV emphasizes the connections between non-market failures, implementation analysis, and policy analysis. The connections shown with dotted lines are alluded to, but not treated in detail.

The aim of the following discussion, then, is to provide a set of guidelines, questions, and procedures based on the previous treatment of non-market failures: a "cookbook" of recipes for doing implementation analysis as an addition to the standard components of conventional policy analysis.

As a first step in incorporating implementation analysis systematically into policy studies, it may be useful to distinguish two parts: (A) descriptive; (B) normative-inventive.

(A) The *descriptive* part of implementation analysis should use the structure of non-market failure outlined above as a check list to be tracked in comparable form for each policy alternative under consideration. More specifically, the following implementation questions would be addressed as part of the formulation and evaluation of policy alternatives and prior to choosing among them:

1. If policy A (or B, or C) were to be followed, *what government departments, agencies, or bureaus* would have to be *assigned what precise responsibilities*?
2. To the extent these designated agencies are already in existence, rather than new agencies to be created, what are the *internalities and private goals* that now motivate them, and how is behavior affected as a result? (If one looks at how these agencies really operate, especially at their criteria for recruiting, evaluating, and promoting personnel, how is "output" actually measured, and how are "success" and "effectiveness" in producing it assessed? Are staff members rewarded for adding to or justifying costs, or for reducing them; for generating "new" technology, or

opposing it, or selectively discriminating among different types; for connecting the agency with new information sources, and protecting and restricting access to them, or for facilitating informational access and exchange with other agencies?).

If some or all of the policies under consideration call for the creation of new administering agencies, can the corresponding internalities, and the way in which they will influence agency behavior, be anticipated (e.g., by the evident connection between particular policies and the groups or interests advocating them?). Can these prospective agency internalities be modified by program redesign, and with what expected effects on agency behavior?

3. What *externalities* may result from the alternative policies--over what time period and with what prior probabilities attached to them--in consideration of the content, scale, and impacts, perhaps in policy areas remote from the target area, of the policies and programs under consideration? From the analyst's point of view, allowing for these "unforeseen" externalities is thus an exercise in trying hard to remember what he would otherwise overlook.
4. Based on the track records of the agencies involved, on scrutiny of the alternative policies for the possible existence of inconsistent or otherwise infeasible program objectives, and on considerations covered in (2) above, can estimates be made of the prospective occurrence of *redundant and rising costs* associated with the agency responsibilities identified in (1) above? Can cost-estimating relationships be calculated (as in the system acquisition example referred to earlier) expressing the upward drift in cost functions to be expected over time?

5. Finally, in accord with the way in which each of the policies or programs would be expected to operate, what changes would ensue in *distribution*, not only income distribution but also in the distribution of *power* that may be wielded by some over others?

It is evident that many, indeed most, of the foregoing questions are not answerable in exact, let alone quantitative, terms. Answers are likely to be judgments and opinions, hence subject to some disagreement by reasonable people even after substantial empirical work to attain "objective" information. Nevertheless, even "soft" answers, which display divergent opinions, should be valuable for the normative dimension of implementation analysis.

(B) There are three *normative* purposes to be served by the previous descriptive treatment of alternative policies and programs.

One purpose is simply to facilitate evaluation of the specified alternatives with respect to the ease or difficulty of implementing them: of translating "what were good to be done" into an estimate of what actually would get done. In effect, this would amount to an adjustment in the costs and benefits as modeled *before* implementation considerations were brought into the analysis.

A second purpose is to facilitate comparison between the actual inadequacies associated with the market, and the potential inadequacies associated with implementation of the non-market remedies under consideration. Juxtaposing the market failures to be remedied, and the non-market failures to be anticipated from the intended remedies, would permit an assessment that has been rare in previous policy studies and should become difficult to avoid in future ones.*

The third purpose of applying the paradigm of non-market failure in the descriptive manner suggested, is to stimulate invention: new ideas for policies and programs, or combinations among those under consideration, or of parts of them, or of entirely

*This comparison is similar to what has been referred to as "zero-based budgeting" in discussions of planning, programming and budgeting systems (PPBS). (Smithies 1955). The inadequacies of a particular market outcome, with little or no public intervention (a "zero" budget), may be preferable to the inadequacies of the non-market remedy.

different approaches to the problem. A systematic comparison between market-failures and non-market failures in a particular problem area (the second purpose mentioned above), and among the prospective non-market failures associated with various alternative policies (the first purpose), should contribute to a result Dr. Johnson associated with the prospect of being hanged: namely, "to concentrate the mind wonderfully." Invention of new options, or discovery of ways to improve existing options, may result.

If non-market solutions have been needed as countermeasures against market failures, we now need to develop countermeasures against non-market failures (hence, counter countermeasures against market failures).

Besides evaluation of the existing set of options, the normative-inventive part of implementation analysis should focus on the following set of questions, which are as important, and as formidable, as the previous set:

1. Are there relatively simple and easily-administered "fixes" in the operation of markets which would sufficiently alleviate the acknowledged market failure to provide an acceptable solution?*
2. Can policies be invented that, while recognizing the need for non-market interventions because the market's inadequacies are so great (e.g., in the case of public goods, or private goods with major externalities), nevertheless try to retain certain valuable characteristics of market solutions, e.g., competition by several producers, tangible and public performance

*Some possible examples:

(a) Estimating the separate effect of noise emissions on property values in airport vicinities and obliging airlines to compensate property owners accordingly, while leaving to the airlines the choice of aircraft power plant, acoustical damping, etc.

(b) Using foreign trade policy as an adjunct or alternative to anti-trust policy in maintaining competitive pressures in increasing returns industries.

(c) Reducing market imperfections (e.g., by removing or lowering barriers to entry, providing adjustment assistance to facilitate factor mobility, etc.).

measures, a "bottom-line" incentive structure in operating agencies? In particular, can mechanisms be devised or adapted for the "reprivatization" of certain public services, e.g., for example, using exchangeable publicly-funded vouchers for the "purchase" of education; open bidding on private contracts for waste disposal or postal services, etc.*

3. Can improved measures for non-market output be devised, so that those non-market failures resulting from the lack of a suitable metric can be reduced? Can tests be made of the connections, or lack thereof, between the intermediate outputs that are often reflected in agency "internalities," and the final outputs that are intended?
4. Can the internalities (standards, goals), that provide the incentives for individual and agency behavior, be revised so as to be more closely connected with the final intended output?**
5. Can improved information, feedback, and evaluation systems be built into new policies and programs in order to reduce the risks of cooptation by a "client" group, and to publicize it if it occurs?

These are formidable questions, no less formidable than those relating to the descriptive aspects discussed earlier. As a recipe for doing implementation analysis, both descriptive and normative aspects can be compared to the parable about "belling the cat": they suggest where to go without indicating how to get there! They raise questions without suggesting how to answer them.

* Drucker (1969), Pascal (1972), Rice in Jacoby, ed. (1975). The use of market analogues, incentives and mechanisms to improve government performance is forcefully argued by Schultz (1977).

** Such revisions are apt to involve consideration of agency personnel practices, and in this respect would move the implementation part of policy analysis in one direction taken by management consulting.

At best, attempts to respond systematically to the implementation questions raised by the non-market failure paradigm are likely to result in very "soft" answers. Yet even without firm or complete answers, or indeed even without answers at all, there is considerable merit in the exercise. Addressing the questions in specific policy contexts requires that they be reformulated with precise reference to those contexts. For each policy alternative, the cardinal implementation issues ('who has to do what?'; 'when?'; 'how?') can't be avoided. What has been omitted from virtually all policy studies, and what has significantly contributed to the failure of many implemented policies, must then be given explicit attention.

Another type of criticism can be advanced, as well. If, in fact, these formidable implementation questions *can* be answered in some fashion, why can't the answers simply be fed back into conventional policy analyses in accord with the standard methodology described earlier? Why can't the descriptive aspects of implementation analysis be made part of the analytical models, and included in the usual cost-effectiveness calculations? And why can't the normative-inventive aspects simply be added to the policy alternatives to be run through the analytical models?

The questions imply a direction of development that policy analysis should take: incorporation of implementation considerations *within* the existing "chapters" of the standard analyses, rather than as a separate chapter. However, we just don't know enough yet to be able to do this. Raising the implementation questions as issues for consideration can likely elicit enough of a response to be useful in filling a gap in existing policy studies. But the response is unlikely to be sufficiently rigorous for formal inclusion in analytical models at this stage. We need first to consider in a rough and qualitative way what has been largely ignored in policy research, as a step toward more systematic inclusion in analytic methodology in the future.

V. CONCLUSIONS

The foregoing argument can be summarized in several propositions:

1. The essential rationale for public policy measures lies in specific failures of the market of itself to produce efficient or otherwise socially preferred outcomes.
2. However, this rationale alone can provide only a necessary, not a sufficient, justification for public policy interventions. Sufficiency requires that specifically identified market failures be compared with potential *non*-market failures associated with the implementation of public policies. Such a comparison is needed to arrive at a balanced assessment of whether, as well as what kind of, policy intervention will come closer to a socially preferred outcome.
3. There are four sources of the market's failure to produce socially preferred outcomes: externalities and public goods; increasing returns; market imperfections; and distributional inequity. The most general explanation for these failures is that markets don't exist, and perhaps can't be created, that will suitably capture the full social benefits or levy the full social costs of market activity. (This general explanation can be extended to include in part, though not completely, the last of the four market failures, distributional inequity.)
4. Similarly, as a result of certain demand and supply characteristics associated with non-market output, there are four sources and types of *non*-market failure (NMF): "internalities" and private goals (relating, for example, to agency budgets, technology, and information acquisition and control); redundant and rising

costs; derived externalities; and distributional inequity (indexed on power, as well as on income or wealth). These non-market failures are often directly related to certain distinguishing characteristics associated with non-market production processes, e.g., difficulties of defining and measuring output, absence of competition, lack of an effective termination mechanism, etc. Where there is NMF, there is an absence of non-market incentives that reconcile the calculations of costs and benefits by government decisionmakers with *total* costs and benefits.

5. In order to permit a more accurate assessment to be made of the preferability among alternative public policies, as well as between them and market outcomes, policy analysis needs to give explicit attention to how particular policy alternatives will be implemented. Implementation analysis, as a regular component of policy analysis, should link the formal modeling and cost-effectiveness comparisons among alternative policies with consideration of how policies are likely to be altered if implemented. It is intended to explain and anticipate the frequent tendency of implemented policies to result in higher costs and lower benefits, as well as different consequences, from those calculated in conventional policy studies. It should therefore contribute to achieving, or getting closer to, a second-best optimum in policy selection.
6. There are two parts to implementation analysis:
 - (a) a descriptive part, in which the previously mentioned sources of non-market failure are systematically traced for each policy alternative; and
 - (b) a normative-inventive part, in which the costs and consequences of each alternative--as modified by the description of implementation realities--are

compared with one another, as well as with the market outcome and its attendant shortcomings. Further, this part of implementation analysis should explicitly consider changes and inventions in the policy options under consideration; changes that can be expected to reduce either the failures of non-market activities (e.g., by devising improved measures of final output and translating them into agency standards or "internalities," or by "reprivatizing" public services), or the failures of market solutions (e.g., by measures that reduce market imperfections).

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